

**Flies of the Tribe Tephritini (Diptera: Tephritidae)
from Ajabshir Region (East Azerbaijan Province), with New Records for Iranian Fauna**

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Gharajedaghi Y., Khaghaninia S., Mohamadzade Namin S. Flies of the Tribe Tephritini (Diptera: Tephritidae) from Ajabshir Region (East Azerbaijan Province), with New Records for Iranian Fauna. Abstract. Based on specimens collected from Ajabshir region during 2010, eleven species of eight genera of the tribe Tephritini (Tephritidae) are recognized to occur here. *Campiglossa loewiana* (Hendel) and *Tephritis oedipus* Hendel are recorded for the first time from Iran. The distribution and host plants of each species and a provisory key to species of the tribe Tephritini occurring in this region are given.

Key words: Tephritidae, Tephritini, Ajabshir region, Iran, new record.

Гараджедаги Й., Хаганінія С., Мохамадзаде С. Мухи-пестрокрилки триби Терхітіні (Diptera: Tephritidae) в районе Аджабшира (провінція Восточний Азербайджан), з новими знахідками для фауни Ірана. Резюме. Из района Аджабшира, на основании материала, собранного в 2010 г., указаны 11 видов из 8 родов трибы Tephritini. *Campiglossa loewiana* (Hendel) и *Tephritis oedipus* Hendel отмечены впервые из Ирана. Приводятся распространение и кормовые растения для каждого из видов и таблица для определения видов Tephritini, известных из района исследований.

Ключевые слова: Tephritidae, Tephritini, район Аджабшира, Иран, новые находки.

Гараджедаги Й., Хаганінія С., Мохамадзаде С. Мухи-осетниці триби Терхітіні (Diptera: Tephritidae) в районі Аджабшира (провінція Східний Азербайджан), з новими знахідками для фауни Ірану. Резюме. З району Аджабшира, на основі матеріалу, зібраного в 2010 р., наведено 11 видів з 8 родів триби Tephritini. *Campiglossa loewiana* (Hendel) і *Tephritis oedipus* Hendel відмічено вперше з Ірану. Наведено поширення і кормові рослини для кожного з видів і таблицю для визначення видів Терхітіні, відомих з району досліджень.

Ключові слова: Tephritidae, Tephritini, район Аджабшира, Іран, нові знахідки.

Introduction

Tephritidae (true fruit flies) is a large family of order Diptera with more than 4400 described species over the world. Considering their damage on fruit plantations, they

are important insects from the agricultural point of view as well as forest entomology (Merz, 2001). In addition, some species of this family are important agents in biological control programs against weeds (White & Elson-Harris, 1992).

Tribe Tephritini is a worldwide group of about 80 genera and about 30 of which occur in the Palaearctic region. Biologically, most species of this tribe infest the flower heads and in a few cases roots and stems of asteraceous host plants that may induce formation of galls (Freidberg, 1984).

Ajabshir region is located in south west of East Azerbaijan province, close to eastern beach of the Urumiyeh Lake with UTM (Universal Transfer Mercator) coordinate system, X from 572964.47 to 599802.25 E; Y from 4147773.18 to 4161843.04 N and varying latitude from 1350 m to 2113 m. Before this study, little information was available on the tribe Tephritini of Ajabshir region. Gharajedaghi et al. (2011) reported six species of the genus *Tephritis* Latreille (*Tephritis cometa* (Loew), *T. formosa* (Loew), *T. hurvitzi* Freidberg, *T. hyoscyami* (Linnaeus), *Tephritis postica* (Loew) and *T. praecox* (Loew)) from this region.

Materials and methods

Materials collected by sweeping net on flower heads of asteraceous plants in ten localities which situated through the working area during 2010.

Collected specimens were deposited at Insect Museum of Tabriz University (IMTU) and the third author's personal collection (SMNC). The terminology primarily follows White et al. (1999).

The responsibilities are distributed between the authors as follows: YG collected the specimens, YG and SK wrote the manuscript and SMN identified the species, edited the manuscript and prepared the illustrations.

Results

In this study, eleven species from eight genera were collected in Ajabshir region. Of them, *Campiglossa loewiana* (Hendel) and *Tephritis oedipus* Hendel are being recorded for the Iranian fauna. All the species are recorded for the first time from this region. Species are listed in alphabetic order.

Key to species of the tribe Tephritini in Ajabshir region

1. Wing banded with 1 vertical crossband. *Sphenella marginata*
- Wing without crossband, with radiate or reticulated pattern. 2
2. Proboscis geniculate. *Campiglossa* [only *C. loewiana* is known by far, (r_{2+3} apex with 2 isolated spots, base r_{4+5} with one oval spot, posterior notopleural seta white, finely trichose frons)].
- Proboscis capitate. 3
3. One pairs of scutellar setae present. 4
- Two pairs of scutellar setae present. 5

4. Vein CuA₁ with a brown stripe along it from dm-cu to hind margin of wing. *Trupanea amoena*
- Vein CuA₁ entirely with hyaline areas. *Tr. stellata*
5. Three frontal setae present. 6
- Two frontal setae present (*Tephritis* or *Heringina*). 7
6. Frontal stripe bare; apical scutellar setae about half as long as basal scutellar setae. *Acanthiophilus helianthi*
- Frontal stripe hairy; apical scutellar setae about 0.8 as long as basal scutellar setae. *Tephritomyia lauta*
7. Third segment of antenna about 2.5 times as long as wide, fore femur in male swollen. *Euaresta bullans*
- Third segment of antenna less than twice as long as wide, fore femur in male normal. 8
8. Apical fork of wing absent, only isolated brown or black spots present at end of vein R₄₊₅ and M₁₊₂. 9
- Apical fork of wing present. 12
9. Anal lobe with dark pattern. *Tephritis formosa*
- Anal lobe hyaline. 10
10. Crossvein r-m dark or at most with 2-4 small isolated dots around it; hyaline spot in cell r_{2+3} basally of r-m small, 0.2-0.3 times as wide as 2nd hyaline cell in r1; cell dm posterior of r-m with small round hyaline spots not touching vein M. In *Arctium*. *Te. bardanae*
- Crossvein r-m surrounded with 4 larger, often fused spots; hyaline spot in r_{2+3} basally of r-m larger, 0.5-1.0 times as wide as 2nd hyaline cell in r1; cell dm posterior of r-m with large pear-shaped or subrectangular hyaline spot touching vein M. Not in *Arctium*. 11
11. Brown spots in middle of posterior margin of cell dm connected with brown spot of anal cell, in *Onopordum*. *Te. postica*
- Brown spots in middle of posterior margin of cell dm not connected with brown spot of anal cell, in *Carduus*. *Te. hyoscyami*
12. Cell r₁ with 4 hyaline indentation. 6th abdominal tergite shiny. *Heringina guttata*
- Cell r₁ with 2-3 hyaline indentation. 6th abdominal tergite microtricose. 13
13. Cell r_{2+3} with 3 hyaline spots in middle part. *Te. dioscurea*
- Cell r_{2+3} with 1-2 hyaline spots in middle part. 14
14. Small subapical hyaline spot present in cell r₁. 15
- Cell r₁ without small subapical hyaline spot. 16
15. Basal one-third of wing with pale brownish pattern, cell r_{2+3} with 2 hyaline spot in middle part posterior of hyaline indentation of cell r₁. *Te. oedipus*
- Basal one third of wing hyaline, r_{2+3} with only 1 hyaline spot in middle part posterior to hyaline indentation of cell r₁. *Te. cometa*
16. Cell r_{2+3} with 2 hyaline spot in middle part posterior of hyaline indentation of cell r₁. *Te. praecox*
- Cell r_{2+3} with only 1 hyaline spot in middle part posterior to hyaline indentation of cell r₁. *Te. hurvitzi*

List of species.

Tribe Tephritini

Acanthiophilus helianthi (Rossi, 1794)

Material examined: Ajabshir, Zaviyeh, 37°29' N, 45°52' E, 1320m, 24.03.2010, 8 ♂, 14 ♀; Ajabshir, Gunbed, 37°30' N, 46°01' E, 1437m, 13.02.2010, 4 ♂, 8 ♀; Ajabshir, Tejarak, 37°28' N, 45°49' E, 1660m, 13.02.2010, 3 ♂ (Gharajedaghi leg.).

Host plants: The larvae develop in flower heads of various species of *Carthamus*, *Centaurea* and related genera of the family Asteraceae (Freidberg & Kugler, 1989; Merz, 1994).

Distribution: North and East Africa; Central and South Europe; Central Asia, Iran, India, China and Thailand (Norrbom et al., 1999; Korneyev & Dirlbek, 2001).

Campiglossa loewiana (Hendel, 1927) (Fig. 1)

Material examined: Ajabshir, Galachay, 37°31' N, 46°07' E, 1469m, 24.03.2010, 4 ♂, 1 ♀ (Gharajedaghi leg.).

Host plants: *Solidago virgaurea* (White, 1988).

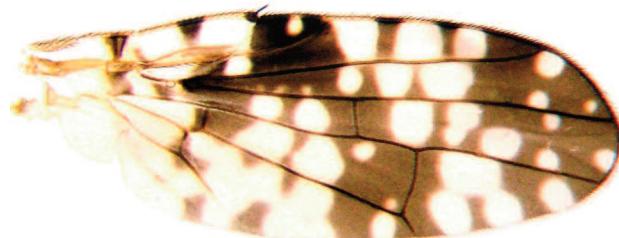


Fig. 1. *Campiglossa loewiana* (Hendel). Right wing.

Distribution: British Is., France, Albania, Ukraine, Russia, Mongolia and China (Norrbom et al., 1999). **New record for the Iranian fauna.**

Diagnosis: Wing pattern reticulated, with 2 hyaline spots in cell r_1 ; apex of r_{2+3} with 2 isolated spots, base r_{4+5} with one oval spot, (Fig. 1) posterior notopleural seta white, fine trichose frons.

Euaresta bullans (Wiedemann, 1830)

Material examined: Ajabshir, Zaviyeh, 37°29.988' N, 45°52.560' E, 1320m, 24.03.2010, 2 ♂, 1 ♀ (Gharajedaghi leg.).

Host plants: *Xanthium spinosum*.

Distribution: Southern Europe from Spain to Southern Ukraine, Turkey, Israel, Iran, North and South America, Southern Africa and Australia (Norrbom et al., 1999); Iran.

Heringina guttata (Fallén, 1814)

Material examined: Ajabshir, Bag dara, 37°29.885' N, 45°52.344' E, 2037m, 1.04.2010, 3 ♀ (Gharajedaghi).

Host plants: The larvae develop in flower head galls on *Anthemis arvensis*, *Leucanthemum vulgare*, *Cirsium palustre* and *Hieracium sabaudum* (Merz, 1994).

Distribution: Sweden, Finland, Ukraine, Kazakhstan; Iran (Zaitzev, 1947; Norrbom et al., 1999).

Sphenella marginata (Fallén, 1814)

Material examined: Ajabshir, Bag dara, 37°29.885' N, 45°52.344' E, 2037m, 1.04.2010, 2 ♂, 3 ♀; Ajabshir, Tapikdare, 37°29' N, 45°53' E, 1540m, 20.02.2010, 1 ♀ (Gharajedaghi).

Host plants: *Senecio* spp. (Merz, 1994).

Distribution: Europe, Russia, Egypt, Israel, Afghanistan; Iran (Norrbom et al., 1999).

Tephritis bardanae (Schrank, 1803)

Material examined: Ajabshir, Zaviyeh, 37°29.988' N, 45°52.560' E, 1320 m, 24.03.2010, 1 ♂ (Gharajedaghi leg.).

Host plants: *Arctium* spp. (White, 1988).

Distribution: British Is., Scandinavia, France and Central Europe, to Kazakhstan; Iran (Norrbom et al., 1999; Gilasian & Merz, 2008).

Tephritis dioscurea (Loew, 1856)

Material examined: Ajabshir, Galachay, 37°31' N, 46°07' E, 1469m, 24.03.2010, 1 ♀ (Gharajedaghi leg.).

Host plants: *Achillea millefolium*, *Artemisia absinthium* (Merz, 1994).

Distribution: Sweden, France to Kazakhstan, Caucasus, Russia, Turkey; Iran (Norrbom et al., 1999; Kutuk, 2006; Zarghani et al., 2010).

Tephritis oedipus Hendel, 1927 (Fig. 2)

Material examined: Ajabshir, Bag dara, 37°29.885' N, 45°52.344' E, 2037m, 25.02.2010, 1 ♀ (Gharajedaghi leg.).

Host plants: *Lactuca tatarica* (Korneyev & Karpyuk, 2009).

Diagnosis: Wing pattern reticulated, and brownish. Stigma completely brown. Cell r_1 without small subapical hyaline spot. Cell r_1 with 2 large hyaline marginal indentation, cell r_{2+3} with 3 hyaline spot in middle portion and connected with hyaline indentations in cell r_1 and 2 apical spots. Rays of apical fork narrow (Fig. 2). Oviscape about as long as 2 preceding abdominal tergites.



Fig. 2. *Tephritis oedipus* Hendel. Left wing.

Distribution: Kazakhstan, Central Asia, Mongolia, China and Ukraine (Norrbom et al., 1999; Korneyev & Karpyuk, 2009). **New record for the Iranian fauna.**

Tephritis myia lauta (Loew, 1869)

Material examined: Ajabshir, Bag dara, 37°29.885' N, 45°52.344' E, 2037m, 1.01.2010, 30 ♂, 25 ♀; Ajabshir, Yengeje, 37°33' N, 45°58' E, 1788m, 9.02.2010, 3 ♂, 6 ♀ (Gharajedaghi leg.).

Host plants: Flower heads of *Echinops viscosus* (Freidberg & Kugler, 1989).

Distribution: Greece, Israel, Tunisia, Egypt; Iran (Norrbom et al., 1999).

Trupanea amoena (Frauenfeld, 1857)

Material examined: Ajabshir, Bag dara, 37°29.885' N, 45°52.344' E, 2037m, 13.02.2010, 1 ♂, 1 ♀ (Gharajedaghi leg.).

Host plants: *Lactuca* sp., *Picris hieracoides* and *Sonchus* sp. (Merz, 1994).

Distribution: Europe, Ethiopia, Middle East, India, Sri Lanka, Australia; Iran (Norrbom et al., 1999; Korneyev & Dirlbek, 2001).

Trupanea stellata (Fuesslin, 1775)

Material examined: Ajabshir, Bag dara, 37°29.885' N, 45°52.344' E, 2037 m, 17.03.2010, 1 ♀ (Gharajedaghi leg.).

Host plants: *Senecio* spp., *Artemisia judaica*, *Inula graveolens* and *I. viscosa* in Israel (Freidberg & Kugler, 1989). In Europe reared from *Anthemis* spp., *Aster* sp., *Bidens* sp., *Centaurea* spp., *Crepis* spp., *Inula* sp., *Picris* sp., *Senecio* sp. and *Serratula* sp. (Merz, 1994).

Distribution: Europe, Middle East, Mongolia, India, Africa; Iran (Norrbom et al., 1999; Korneyev & Dirlbek, 2001).

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